

PC Benchmarking

In the 21st Century

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Introduction

- Traditional PC Benchmarks are Flawed
 - Emphasis on Linear Execution
 - Single Tasking/Single Threaded Test Scripts
 - CPU Bound/Processor-centric Methodologies
 - Unrealistic Runtime Environments (Synthetic)
 - Heavily Influenced by Major Chip Vendors (Intel)
 - Bottom Line: They Fail to Quantify Impact of Constant Computing at an Architectural Level

Constant Computing Defined

- A Real-World Compute Model
 - Incorporates Key OS and Application Loads
 - Device Drivers, OS Services and Agents
 - Subsystem & Application-level Overhead
 - Compression, Encryption (Environmental Factors)
 - Enterprise Manageability and Security Elements
 - C.C. is How Personal Computers Really Work
 - Actively – Concurrently – Constantly

Building a C.C. Benchmark

- Define a Realistic Scenario
 - Knowledge Worker, Supply Chain Manager, etc.
 - Concurrency is Key – All PC Systems Multitask
 - Multiple Processes with Independent Scheduling
 - Discreet Workloads that are Easily Reproduced
 - Synchronized Against a Traditional Linear Script
 - The Goal is to Reproduce and then Measure a PC Runtime Environment as it Exists In the Wild

Additional Factors

- Fully Instrument the Test Environment
 - Track Key System and Application Metrics
 - Application/Process-level and System-wide
 - CPU, Memory, Disk and Network Utilization
 - Tell-tale Performance Indicators (CPU Queue)
 - Multi-stage Test Script Sampling/Scoring
 - PC Performance is More Than Just a Colorful Benchmark Score – Take the Holistic View

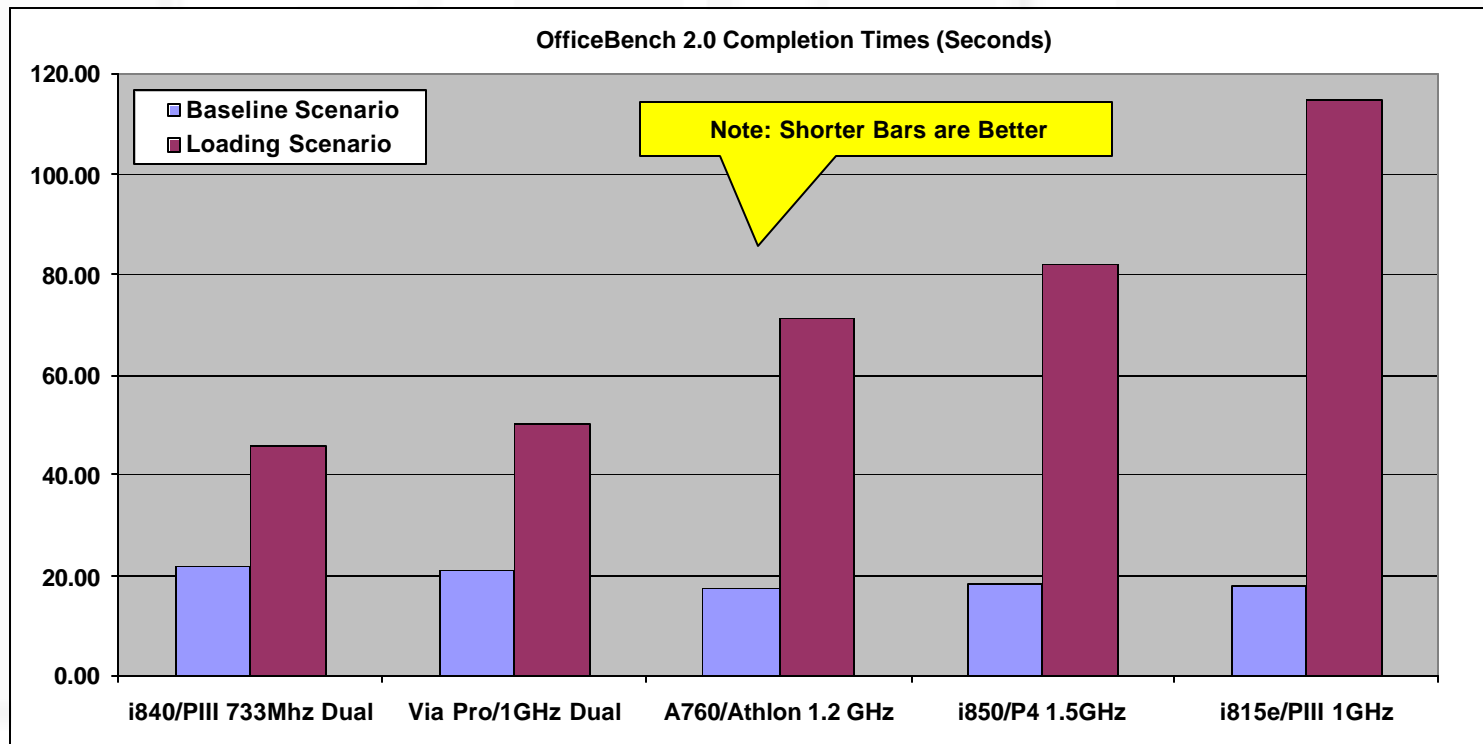
Potential Pitfalls

- C.C. Principles Can Be Difficult to Embrace
 - Greater Sophistication Breeds Complexity
 - C.C. Methodologies Require Tremendous Planning
 - Multiple Components = Multiple Points of Failure
 - Synchronization is Critical – Design Accordingly
 - Lessons from the Intel “Digital Dashboard” Demo
 - It Takes a Strong Commitment, but the Results Are Compelling and Well Worth the Effort

Benchmark Studio 1.0

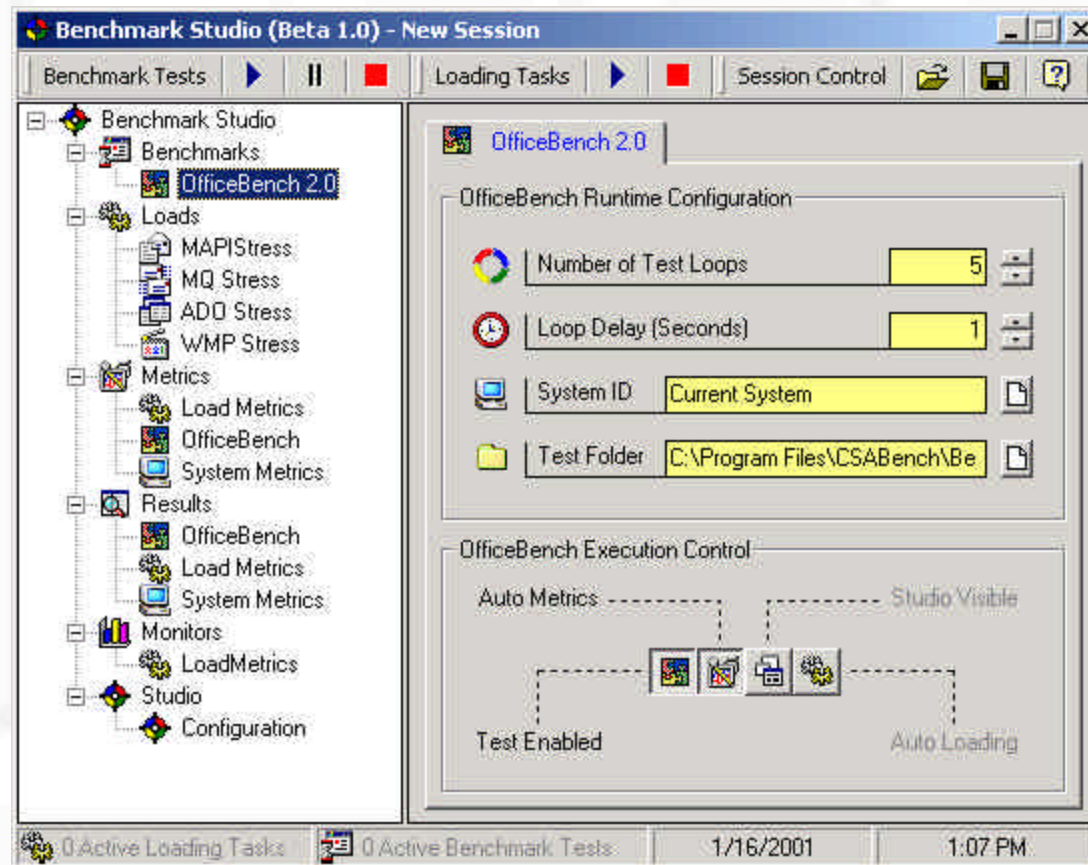
- Our Attempt to Fill the C.C. Tools Gap
 - Integrated Load Simulation and Testing
 - Object Oriented Execution Framework (COM-based)
 - Support for Multiple Test Scripts and Load Generators
 - Single-button Synchronization – Click and Go
 - Fully Instrumented Runtime Environment
 - Extensible – Roll Your Own Studio Components
 - Gives IT Professionals the Ability to Effectively Evaluate Next Generation PC Performance

Example Results



Disclosure: Above Loading Scenario is an 18-process configuration consisting of 5 database (ADO), 5 asynchronous messaging (MSMQ), 3 workflow (MAPI) and 5 multimedia (WMP) loads. All test systems featured identical video (ATI Radeon DDR), disk (7200RPM UDMA/66), NIC (Intel Pro 100) and audio (Creative SB Live Value) components and were equipped with 256MB of the highest performing (CL2, PC800, etc.) memory available.

Demonstration



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